PATENT ABSTRACTS OF JAPAN

(51)Int.Cl.	H04H 7/00
	G06F 13/00
	H04N 7/16

(54) BROADCAST SYSTEMBROADCAST METHOD AND RECORDING MEDIUM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a broadcast system in which broadcast of pluralities of channels is attained with an inexpensive installation and a small job amount.

SOLUTION: A broadcast enterprise installs an index server 21which manages broadcast schedules 31A31B of channels CH1CH2. Each of pluralities of program producers installs information servers 25A-25Dwhich manage contents 33 of programs produced by each. The index server 21 gives an instruction of

broadcasting each program to each of the information servers 25A-25D according to the broadcast schedules 31A31B. Each of the information servers 25A-25D broadcasts program contents managed by each to a channel instructed on a network 23 for a designated time zone. The broadcast program contents are combined timewise to configure a series of multimedia data streams 35A35B. The data streams 35A35B are received by pluralities of client terminals 29A29B by a method IP multicast.

CLAIMS

[Claim(s)]

[Claim 1]One or more sets of information servers broadcast to a channel specified as a time zone which held contents data of one or more information blocksand had contents data of each information block specified. A broadcasting system provided with an index server which specifies a time zone which said information server and communication are possibleshould manage each broadcasting schedule of one or more channelsand should broadcast each information block according to said broadcasting scheduleand a channel to each of said information server.

[Claim 2]The broadcasting system according to claim 1 with which said information server and said index server are distributed on a communication network.

[Claim 3]The broadcasting system according to claim 1 which each of said information server broadcasts that said contents data is by a method of an IP multicast.

[Claim 4]The broadcasting system according to claim 1 with which said index server has a broadcast project management means for performing new registration of said broadcasting schedule and making a change.

[Claim 5]The broadcasting system according to claim 1 which has a means by which said information server holds information-block detailed information which

contains a title at the time of broadcast of each information block with said contents data of each information blockand notifies said information-block detailed information to said index server.

[Claim 6]Said index server answers an inquiry from each information serverand it is confirmed whether an operator of each information server is a formal authority personHave an authentication means which replies a checked result to each information serverand said each information serverThe broadcasting system according to claim 1 which has a means to send information which an operator of each information server inputted to said index serverand to request said checkand to permit operation of each information server by said operator when a checked result from said index server is an authentication success.

[Claim 7]One or more sets of information servers broadcast to a channel specified as a time zone which held contents data of one or more information blocksand had contents data of each information block specifiedand communication are possibleAn index server for a broadcasting system provided with a broadcast control means which specifies a time zone which should manage each broadcasting schedule of one or more channelsand should broadcast each information block according to said broadcasting scheduleand a channel to each of said information server.

[Claim 8]An index server which manages each broadcasting schedule of one or more channelsand communication are possibleHold contents data of one or more information blocksand specification of a time zone and a channel which should broadcast each information block according to said broadcasting schedule is received from said index serverAn information server for a broadcasting system provided with a broadcast means to broadcast to a channel specified as a time zone which had contents data of each information block specified.

[Claim 9]A broadcasting method comprising:

An information server which holds contents data of one or more information blocks.

A process using an index server which has managed each broadcasting schedule of one or more channels.

A process in which said index server specifies a time zone which should broadcast each information block according to said broadcasting scheduleand a channel to each of said information server.

A process in which said each information server broadcasts contents data of each information block to a channel specified as a time zone specified by said index server.

[Claim 10]One or more sets of information servers broadcast to a channel specified as a time zone which held contents data of one or more information blocksand had contents data of each information block specifiedand communication are possibleAs an index server for a broadcasting system provided with a broadcast control means which specifies a time zone which should manage each broadcasting schedule of one or more channelsand should broadcast each information block according to said broadcasting scheduleand a channel to each of said information serverA program recording medium which supported a computer program in which machinery reading for operating a computer is possible.

[Claim 11]An index server which manages each broadcasting schedule of one or more channelsand communication are possibleHold contents data of one or more information blocksand specification of a time zone and a channel which should broadcast each information block according to said broadcasting schedule is received from said index serverA program recording medium which supported a computer program in which machinery reading for operating a computer is possible as an information server for a broadcasting system provided with a broadcast means to broadcast to a channel specified as a time zone which had contents data of each information block specified.

[Claim 12]A broadcast perusing device comprising:

One or more sets of information servers broadcast to a channel specified as a

time zone which held contents data of one or more information blocksand had contents data of each information block specified.

Said information server and communication are possible and each broadcasting schedule of one or more channels is managedIt is used combining a broadcasting system provided with an index server which specifies a time zone which should broadcast each information block according to said broadcasting scheduleand a channel to each of said information serverA means to choose arbitrary channels out of said one or more channelsand a means to receive a stream of said contents data currently broadcast from one or more sets of said information servers to said selected channel.

[Claim 13]A program recording medium which supported a computer program in which machinery reading for operating KOMPYUTA ** is possible as a broadcast perusing devicecomprising:

One or more sets of information servers broadcast to a channel specified as a time zone which held contents data of one or more information blocksand had contents data of each information block specified.

Said information server and communication are possible and each broadcasting schedule of one or more channels is managedIt is used combining a broadcasting system provided with an index server which specifies a time zone which should broadcast each information block according to said broadcasting scheduleand a channel to each of said information serverA means to choose arbitrary channels out of said one or more channelsand a means to receive a stream of said contents data currently broadcast from one or more sets of said information servers to said selected channel.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention is concerned with the art for broadcasting the data stream which a soundan animationetc. followed to many terminals. This invention can be applied also when distributing to all the terminal groups like [also when broadcasting to a specific terminal group like an IP multicast] the usual broadcastfor exampleit can be used in various broadcast fieldssuch as various kinds of television broadcastinga radio broadcastand a teletext.

[0002]

[Description of the Prior Art]Broadcast of the multimedia data stream which the sound in networkssuch as the formerfor examplethe Internet etc.the animationetc. followed is performed by the way as shown in <u>drawing 1</u>. That isthe various contents entrepreneurs (program production person) 1A-1D create the data 3A - 3D of respectively original program contentand supply a distributor (distribution entrepreneur) as a file. A distributor (distribution entrepreneur) connects these program data 3A - 3D along with a broadcasting scheduleand edits the one multimedia data stream 5. And this multimedia data stream 5 is once accumulated in the one information server 7and from this information server 7that single data stream 5 is turned to terminal 11 group on the network 9and is broadcast.

[0003]

[Problem(s) to be Solved by the Invention]It is necessary to accumulate the contents of all the programs in the one information server 7 in a system conventionally. As the preparationthe contents entrepreneurs 1A-1D carry each program data file 3A - 3D into a distributorThe distributor needs to combine them according to a schedule and it is necessary to edit the multimedia data stream 5 and to do the work which the time and time and effort of accumulating in the information server 7and expense require. In the distributor sidethe mass information server 7 needs to be furnished at high speedand many staffs are also required.

[0004]The burden in the equipmentthe workstaffand cost aspect which are imposed on a distributor from such a thing is heavy. Thereforeone distributor has only one channel (the number of data streams)and the schedule of the channel will not usually be changedonce it decides. Thereforereceiving the program which one distributor sponsors according to one fixed schedule can only do a client. Failure of an information server will stop broadcast of all the programs.

[0005]Thereforethe purpose of this invention is to realize low cost equipment and broadcast by small rating.

[0006]Another purpose of this invention is to carry out facilitating of what is broadcast to a different schedule through two or more channels.

[0007]Another purpose of this invention is to carry out facilitating of the change of a broadcasting schedule.

[0008]Another purpose of this invention is to minimize the program number in which a broadcast stop is carried out by failure of an information server.

[0009]

[Means for Solving the Problem]A broadcasting system according to this invention is provided with the following.

One or more sets of information servers which hold contents data of one or more information blocksrespectively.

An index server which an information server and communication are possible and has managed each broadcasting schedule of one or more channels.

An index server specifies a time zone and a channel which should broadcast each information block according to a broadcasting schedule to each information server. Each information server broadcasts contents data of an information block which each holds to a channel specified as a time zone specified from an index server.

[0010]This broadcasting system can be used in the typically following modes. that isan index server and an information server are distributed on a network as an index server is furnished to the distributor side and an information server is furnished to two or more contents entrepreneurs' each side. An index server by

the side of a distributor has managed a broadcasting schedule of a channel which the distributor provides. Each contents entrepreneur's information server holds contents data of a program (information block) which each contents entrepreneur made. An index server specifies a time zone and a channel for broadcasting each program according to a broadcasting schedule to each contents entrepreneur's information server (in the method of specification of a time zone.). Various modessuch as a method of specifying broadcast start time and finish time beforehandand a method it is directed that a broadcast start is carried out immediately at broadcast start time and finish timeand carry out the end of broadcast immediately againcan take. Each information server broadcasts contents data of each program to hold according to specification from an index server. As a resultfor every channelprogram content broadcast from a different information server is connected in time according to a broadcasting scheduleand constitutes a series of data streams. A client terminal (broadcast perusing device) chooses one or more channelsand receives a data stream currently broadcast from various information servers from the selector channel.

[0011]According to this systemby the contents entrepreneur sidewhat is necessary is for carrying-in work of contents data to become unnecessaryand just to accumulate in a self information serverand since editing work of contents data is lostefficient information dispatch of improvement in a sexincrease in efficiency of worketc. also of the distributor side is attained instancy. Since a mass information server which memorizes all the programs like before becomes unnecessaryespecially a burden by the side of a distributor is eased.

[0012]A data stream of a schedule which is different in two or more channels can consist of easily registering two or more broadcasting schedules into an index server. Change of a broadcasting schedule is also easy. Even if some information servers stopa channel can be maintained by change of a schedule and SABAIBARITI of a system is high.

[0013]According to a suitable embodimenteach information server broadcasts contents data by a method of an IP multicast. Thereforemany client terminals can

receive one data stream simultaneously.

[0014]In a suitable embodimentsince an index server has a broadcast project management means for performing new registration of a broadcasting schedule and making a changework which extends a channel by the distributor side or changes a broadcasting schedule can be done easily.

[0015]In a suitable embodimenteach information server holds detailed information which contains a title at the time of broadcast of a program with contents data of each information block (program)and the detailed information can be notified to an index server. Thereforesince an index server can grasp automatically a title at the time of broadcast to a program set up by the contents entrepreneur sideand other detailed information (for exampleURLan IP addressetc. of an information server)management of a broadcasting schedule can carry out easily and finely.

[0016]In a suitable embodimentan index server answers an inquiry from each information serverand an operator of each information server confirms whether be a formal authority personand has an authentication means which replies a checked result to each information server. Each information server sends information like ID and a password which each operator entered to an index serverrequests a checkand when a checked result from an index server is an authentication successit has a means to permit operation by the operator. Therebythe distributor can prevent what an unauthorized contents entrepreneur broadcasts freely to a self channel.

[0017]Although an index serveran information serverand a client terminal are typically carried out by computerA computer program for that is installable in a computer through a program medium of various gestaltensuch as a disk shape storagea semiconductor memory deviceand a communication network.

[0018]

[Embodiment of the Invention]Drawing 2 shows the overall outline composition of the broadcasting system concerning one embodiment of this invention.

[0019]The distributor has furnished the server called the index server 21. Two or

more broadcast channel CH1 which a distributor providesCH2the broadcasting schedules (what specified two or more programs broadcast by each channel and the broadcasting hours of those) 31A and 31B of --and -- are stored in the index server 21. Howeverthe contents data of the program is not stored in the index server 21. On the other handtwo or more contents entrepreneurs' each has furnished the information servers 25A-25D. The files (program data file) 33A-33 of the program content which each contents entrepreneur created are stored in each information servers 25A-25D.

[0020]Via the network 23the index server 21the information servers 25A-25D and many client terminals 29A and 29Band -- are connected so that communication is possible. The index server 21 is required of the information servers 33A-33F which hold each program content so that it may broadcast to each channel to the broadcasting hours of each channel CH1 stored thereCH2and -- to which each program was specified according to the broadcasting schedules 31A and 31B and --. Each information servers 33A-33F are sent out to the channel with which the network 23 was specified as the broadcasting hours which had data of each program data files 33A-33F to hold specified according to the demand from the index server 21. Since all the information servers 33A-33F operate in this wayon the network 23The multimedia data streams 35A and 35B and -- which program content connected with each channel CH1CH2and every -- according to each broadcasting schedule 31A and 31B and -- are formed.

[0021]Broadcast of the multimedia data streams 35A and 35B and -- is performedfor example by the method of an IP multicastandthereforetwo or more terminals 29A and 29B and -- can be received for one multimedia data stream. Theoreticallyit can be considered that the usual broadcast which all the terminals can receive freely is also one special mode of all the terminal designation in an IP multicast. Each chooses one or two channels or more with two or more broadcast channel CH1CH2and -- arbitrary from insidethe client terminals 29A and 29B and --and receives one of the multimedia data streams 35A and 35B and the --or two or more from the selected channel.

[0022]The troublesome preparatory work that a contents entrepreneur carries the made self program content into a distributor like before in the above-mentioned systemand a distributor edits it is unnecessary. Each contents entrepreneur should just broadcast each program content to the broadcasting hours which were accumulated in each information server (it is not necessary to be large scale like the information server of the conventional distributor)and were specifiedA distributor stores the schedule of each channel in an index server (this does not need to be large scale like the conventional information servereither)and should just direct broadcasting hours to each contents entrepreneur. Thereforethe burden of the field of equipmenta staffetc.especially it ** by the side of a distributor become small substantially. What should be performed in order to provide two or more channels is making the schedule of two or more channels and registering with the index server 21 fundamentallydoes not need to connect program content for every channeland does not need to edit a data stream. Change of a broadcasting schedule should just also change the schedule in the index server 21 fundamentally. Thereforetwo or more channels can be provided easily and schedule change of each channel is also easy.

[0023]Drawing 3 shows the internal configuration of the index server 21 and each information server 25and operation.

[0024]The index server 21 has a treatment module called the service administrator authentication section 41the program administrator authentication section 43the broadcast project management department 45and the broadcast control section 47and has resources called the administrator database 49 and the program database 51. Each information server 25 has the program file 33 of each program as it had and mentioned above a treatment module called the program administrator authentication section 53the contents maintenance section 55the program maintenance section 57and the Broadcast Department 59.

[0025]Hereaftereach part is explained in detail. Firstit explains from the index server 21 side.

[0026]The identification code (ID) of a distributor and a contents entrepreneura

passwordand administrator classification are registered into the administrator database 49 of the index server 21. The administrator classification of a distributor is a "service administrator" and each contents entrepreneur's administrator classification is a "program administrator."

[0027]The service administrator authentication section 41 of the index server 21 judges whether the operator is a formal authority personwhen there are those who operate the index server 21. That isthe service administrator authentication section 41 operates as follows.

[0028](1) Receive the input of ID and a password from the operator.

[0029](2) Confirm whether it is in agreement with inputted IDID of the "service administrator" by whom the password is beforehand registered into the administrator database 49and a password.

[0030](3) Only when the both sides of ID and a password are in agreement as a result of a checkcall the broadcast project management department 45 (therebythe broadcasting schedules 31A and 31Bthe new registration of -- updatingdeletionetc. can be worked now so that it may mention later).

[0031]The program administrator authentication section 43 of the index server 21 collaborates with the program administrator authentication section 53 of the information server 25and when there are those who operate the information server 53it judges whether the operator is a formal authority person. That isthe program administrator authentication sections 43 and 53 operate as follows.

[0032](1) The program administrator authentication section 53 of the information server 25 receives the input of ID and a password from the operator.

[0033](2) The program administrator authentication section 53 of the information server 25 asks ID and the password which were enteredincludes in a messageand transmits to the index server 21.

[0034](3) Confirm whether the program administrator authentication section 43 of the index server 21 answers the inquiry message from the information server 21and it is in agreement with the inputted IDID of the "program administrator" by whom the password is beforehand registered into the administrator database

49and a password. Only when the both sides of ID and a password are in agreementit is judged as an "authentication failure" an "authentication success" and except it.

[0035](4) The program administrator authentication section 43 of the index server 21 replies the decision result of an authentication success or failure to the information server 25.

[0036](5) The program administrator authentication section 53 of the information server 25 permits an operator selection of businessonly when the result from the index server 21 is an "authentication success." The business which can be chosen is "contents maintenance" and "program maintenance."

[0037](6) The program administrator authentication section 53 of the information server 25 calls the contents maintenance section 55when an operator chooses "contents maintenance" (thereby). When new registration of program contenttransmissiondeletionetc. can be performed now so that it may mention laterand an operator chooses "program maintenance" on the other handThe program maintenance section 57 is called (therebyregistrationupdatingetc. of the broadcasting schedules 31A and 31B and the program detailed information to -- can be performed now so that it may mention later).

[0038]The broadcast project management department 45 of the index server 21 is provided with the following.

The schedule management function to carry out new registrationto update this to the program database 51or to delete the broadcasting schedules 31A and 31B for every channeland -- to it.

The program controlling function who does new registration of the detailed information of each program to the broadcasting schedules 31A and 31B and -- according to the demand from the program maintenance section 57 of the information server 25or updates this.

A program controlling function is explained togetherwhen explaining the program maintenance section 57 of the information server 25 later. About a schedule management functionthe operation is as follows.

[0039](1) If the broadcast project management department 45 is called by the service administrator authentication section 41 mentioned aboveit will display a race card as shown in drawing 4 on the display device (not shown) of the index server 21. Much fields for entering a channel numbera program namethe information server name that sponsors that programand the start time and finish time of that programrespectively are located in a line with this race card. All the fields of a race card are blank in first stage.

[0040](2) The broadcast project management department 45 enters a race card in the contents inputted in response to the input of the contents (getting it blocked a channel numbera program namean information server namestart timeand finish time) of the broadcasting schedule from the operator. If an operator inputs a channel number in that casethe broadcast project management department 45 enters a race card in the contents of the registered broadcasting schedulewhen the registered broadcasting schedule of the inputted channel number is looked for out of the program database 51 and it is found. In such the backthe broadcast project management department 45 overwrites the schedule contents inputted by the operator at the contents of the registered broadcasting schedule on a race card. Thereforeon this race cardchange of registration ****************** of the existing channel is also possible as well as the new entry of the schedule of a new channel.

[0041](3) After the entry work to a race card finishesthe broadcast project management department 45 registers into the program database 51 the broadcasting schedule of the contents entered by the race card. When a registered broadcasting schedule is changed on a race card as mentioned above at that timethe broadcasting schedule of the contents after the change is overwritten at the registered broadcasting schedule before the change in the program database 51 (it gets blocked and updates).

[0042]The following matter is registered into each broadcasting schedules 31A and 31B in the program database 51and -- about each program.

[0043]a) Broadcast name (program title at the time of broadcast)

b) Program name (name of program content)

c) Channel number

d) Start time e finish time fIP multicast address (address IP address for IP multicasts)

g) information server IP address h information server URL -- b-e are registered among the matters of these by the schedule management work which the distributor mentioned above does. Other matters are registered based on the program detailed information provided from the information server 25 by the program maintenance service mentioned later.

[0044]The broadcast control section 47 of the index server 21 gives a start and termination indication of each program to the information server 25 which takes charge of each program according to the broadcasting schedules 31A and 31B in the program database 51and --. The operation is as follows.

[0045](1) Acquire the start time of each programfinish timea channel numberand the IP address of the information server 25 which takes charge of each program from the broadcasting schedules 31A and 31B in the program database 51and --.

[0046](2) carry out the broadcast start of the program which the information server 25 takes charge of to at what time to which channel number to each information server 25 -- or carry out the end of broadcast the broadcast start directions "carry out a broadcast start immediately"and at what time -- or transmit immediately the broadcast termination indication "carry out the end of broadcast."

[0047]Nexteach part by the side of the information server 25 is explained.

[0048]It is as having already explained the program administrator authentication section 53 of the information server 25 together with the program administrator authentication section 43 of the index server 21.

[0049]The contents maintenance section 55 of the information server 25 is for making the information relevant to program content or it into the program file 33and carrying out new registrationupdating itor deleting. The operation is as follows.

[0050](1) In the case of a program administrator's authentication successit is

called by the program administrator authentication section 53 as already explained.

[0051](2) receiving specification of work classification (registrationupdatingdeletion) from an operator -- further -- the case of registration or updating -- the input of the contents data of the target programand flow media defining information -- in deletionreceive specification of the program name of the target program. Two or more kinds of data of an animation and voice dataalphabetic datastill picture informationetc. can be inputted as contents data of one program. The following information is included in flow media defining informationfor example.

[0052]a) In the URL (3) registration whose file name f relation the file name e still picture information of the file name d alphabetic data of a broadcast name b program name c animation and voice data doesregister the inputted contents data and flow media defining information as the new program file 33. The file 61 of the various contents data mentioned above and the file 63 of flow media defining information are included in the one program file 33.

[0053](4) In updatingoverwrite the inputted contents data and flow media defining information at the corresponding existing program file 33.

[0054](5) In deletiondelete the program file 33 of the specified program name. Howeverdeletion is refused when the program is registered into the broadcasting schedules 31A and 31B of either of the index servers 21and --.

[0055]The program maintenance section 57 of the information server 25 collaborates with the program maintenance function of the broadcast Planning Department 45 of the index server 21registers program detailed information into the broadcasting schedules 31A and 31B in the index server 21and --or updates this. The operation of the program maintenance function of the program maintenance section 57 and the broadcast Planning Department 45 is as follows.

[0056](1) As already explainedin the case of a program administrator's authentication successthe program maintenance section 57 is called by the program administrator authentication section 53.

[0057](2) With reference to the flow media definition file 63 in the program file 33 of all the programs (or the program specified by an operatornew registrationor the updated program)the program maintenance section 57 asks the program name of the target programincludes it in a messageand transmits to the index server 21.

[0058](3) The broadcast Planning Department 45 of the index server 21 answers the inquiry message from the information server 25and searches the broadcasting schedules 31A and 31B in the program database 52and the program name specified from --.

[0059](4) The broadcast Planning Department 45 of the index server 21 replies the result of search to the information server 25. When registering [whether it registers with search resultsand] with the rowa channel numberStart time and finish time are contained at leastand the registered program detailed information (a broadcast nameIP multiple addressinformation server URLetc.) is also further already included about the program with registered program detailed information.

[0060](5) If there is no problem in the search results from the index server 21the program maintenance section 57 of the information server 25 will read program detailed information from the flow media definition file 63 of an object programand will send this to the index server 21.

[0061](6) The broadcast Planning Department 45 of the index server 21 registers the program detailed information from the information server 25 into the broadcasting schedules 31A and 31B and -- into which the program is registered.

[0062]The Broadcast Department 59 of the information server 25 broadcasts the contents data in the program file 33 to the network 23. The operation is as follows.

[0063](1) Receive the start indication and termination indication of broadcast from the broadcast control section 47 of the index server 21 as already stated.

[0064](2) According to start indicationread the target contents data and URL of a program from the program file 33and start broadcast from the specified start time to the channel which had this specified.

[0065](3) End at the finish time which had broadcast of the target program specified according to termination indication.

[0066]As mentioned abovealthough one suitable embodiment of this invention was describedthis invention can be carried out also with various gestalten other than the embodiment described above. For exampleit is applicable also to broadcast by methods other than an IP multicastand also when broadcasting through a radio channel like to the usual TV broadcastit can apply.

[0067]As mentioned abovealthough the suitable embodiment of this invention was describedthis invention is not limited only to the above-mentioned embodimentand different various modes from the above can also be carried out. For exampleattestation according [a program administrator's attestation] only to the program administrator authentication section 53 of the information server 25It may enable it to carry out three kinds of the attestation only by the program administrator authentication section 43 of the index server 21and attestation by concomitant use with the program administrator authentication section 53 of the information server 25and the program administrator authentication section 43 of the index server 21.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]The block diagram showing the conventional broadcasting system.

[Drawing 2]The block diagram showing the overall outline composition of the broadcasting system concerning one embodiment of this invention.

[Drawing 3]The block diagram showing the internal configuration of the index server 21 and the information server 25and operation.

[Drawing 4]The explanatory view showing a race card.

[Description of Notations]

21 Index server

23 Network

25 Information server

29 Client terminal

31 Broadcasting schedule

33 Program content

35 Multimedia data stream